```
MSSAVLVTLLPDPSSSFREDAPRPPVPGEEGETPPCQPSVGKVQSTKPMPVSSNARRNED  60
GLGEPEGRASPDSPLTRWTKSLHSLLGDQDGAYLFRTFLEREKCVDTLDFWFACNGFRQM 120
NLKDTKTLRVAKAIYKRYIENNSVVSKQLKPATKTYIRDGIKKQQIGSVMFDQAQTEIQA 180
VMEENAYQVFLTSDIYLEYVRSGGENTAYMSNGGLGSLKVLCGYLPTLNEEEEWTCADLK 240
CKLSPTVVGLSSKTLRATASVRSTETAENGFRSFKRSDPVNPYHVGSGYVFAPATSANDS 300
ELSSDALTDDSMSMTDSSVDGVPPYRMGSKKQLQREMHRSVKANGQVSLPHFPRTHRLPK 360
EMTPVEPAAFAAELISRLEKLKLELESRHSLEERLQQIREDEEKEGSEQALSSRDGAPVQ 420
HPLALLPSGSYEEDPQTILDDHLSRVLKTPGCQSPGVGRYSPRSRSPDHHHQHHHHQQCH 480
TLLSTGGKLPPVAACPLLGGKSFLTKQTTKHVHHHYIHHHAVPKTKEEIEAEATQRVRCL 540
CPGGTDYYCYSKCKSHPKAPEPLPGEQFCGSRGGTLPKRNAKGTEPGLALSARDGGMSSA 600
AGGPQLPGEEGDRSQDVWQWMLESERQSKSKPHSAQSIRKSYPLESARAAPGERVSRHHL 660
LGASGHSRSVARAHPFTQDPAMPPLTPPNTLAQLEEACRRLAEVSKPQKQRCCVASQQRD 720
PNHSAAGQAGASPFANPSLAPEDHKEPKKLASVHALQASELVVTYFFCGEEIPYRPMLKA 780
QSLTLGHFKEQLSKKGNYRYYFKKASDEFACGAVFEEIWDDETVLPMYEGRILGKVERID 840
```

FIG. 1

REPLACEMENT SHEET

```
CAGCCGTTCGCGATGGATTTCGGGGCCACCCGGAGGCCGAGGCGTCCGGCTCCCCAAAGG   60
AGAGCTTTGCTGTAAAAGAGAGGAGGCTCACATGAGCCCCTGCTGACTTAAGAGAGACCA  120
AGCCGATTGCTGAGAGGAACTGGAAGAAGAAAAAGGAGGAGGAGGGAAAAAAAGCAAAAC  180
AAAATCCAAACTCAGTGAGACGCTCTCCCTCACCATGAGTAGCGCCGTGTIAGTGACTCT  240
CCTTCCAGATCCCAGCAGCAGCTTCCGCGAGGATGCTCCGCGGCCCCCGGTTCCGGGAGA  300
AGAAGGGGAGACCCCACCGTGTCAGCCTAGTGTGGGCAAGGTCCAGTCCACCAAACCTAT  360
GCCCGTTTCCTCTAATGCTAGGCGGAATGAAGATGGACTGGGGGAGCCCGAGGGGCGGGC  420
CTCCCCCGATTCCCCTTTGACCAGGTGGACCAAGTCTTTACACTCCTTGTTGGGTGACCA  480
GGATGGTGCATACCTCTTCCGGACTTTCCTGGAGAGGGAGAAATGTGTGGATACGCTGGA  540
CTTCTGGTTTGCTTGTAATGGGTTCAGGCAGATGAACCTGAAGGATACCAAAACTTTGCG  600
AGTGGCCAAAGCAATCTATAAGAGGTACATTGAGAACAACAGCGTTGTCTCCAAGCAGCT  660
GAAGCCCGCCACCAAGACCTACATACGAGATGGCATCAAGAAGCAACAGATCGGCTCGGT  720
CATGTTTGACCAGGCACAGACCGAGATCCAGGCAGTGATGGAGGAAAATGCCTACCAGGT  780
GTTCTTGACTTCTGACATTTACCTGGAATATGTGAGGAGTGGGGGGGAAAACACAGCTTA  840
CATGAGTAACGGGGGACTGGGGAGCCTAAAGGTCTTATGTGGCTACCTCCCCACCTTGAA  900
TGAAGAAGAGGAGTGGACGTGTGCCGACCTCAAGTGCAAACTCTCACCCACCGTGGTTGG  960
CTTGTCCAGCAAAACTCTTCGGGCCACCGCGAGTGTGAGATCCACGGAAACAGCTGAAAA 1020
CGGATTCAGGTCCTTCAAGAGAAGCGACCCAGTCAATCCTTATCACGTAGGTTCCGGCTA 1080
TGTCTTTGCACCAGCCACCAGCGCCAACGACAGCGAGTTATCCAGCGACGCACTGACCGA 1140
CGATTCCATGTCCATGACGGACAGTAGCGTAGATGGAGTCCCTCCTTACCGCATGGGGAG 1200
TAAGAAACAGCTCCAGAGAGAGATGCATCGCAGTGTGAAGGCCAATGCCCAAGTGTCTCT 1260
ACCTCATTTTCCGAGAACCCACCGCCTGCCCAAGGAGATGACGCCTGTGGAACCTGCTGC 1320
CTTCGCCGCCGAGCTCATCTCCAGGCTGGAGAAACTGAAACTGGAGCTGGAAAGCCGCCA 1380
TAGTCTGGAGGAGCGGCTGCAGCAGATCCGGGAGGATGAAGAAAAGGAGGGGTCTGAGCA 1440
GGCCCTGAGCTCACGGGATGGAGCACCGGTCCAGCACCCCCTGGCCCTCCTACCCTCCGG 1500
CAGCTATGAAGAGGACCCACAAACCATTTTGGACGACCACCTCTCCAGGGTCCTCAAGAC 1560
CCCCGGCTGTCAATCCCCTGGTGTGGGTCGCTACAGCCCACGGTCCCGCTCCCCCGACCA 1620
CCACCACCAGCACCACCACCATCAGCAGTGTCATACCCTTCTTTCGACTGGGGGCAAGCT 1680
GCCCCCCGTGGCTGCTTGCCCCCTCCTTGGAGGCAAGAGCTTCCTGACCAAACAGACGAC 1740
GAAGCACGTTCACCACCACTACATCCACCACCACGCCGTCCCCAAGACCAAGGAGGAGAT 1800
CGAGGCAGAAGCCACACAGAGAGTCCGCTGCCTCTGTCCTGGGGGAACAGATTATTATTG 1860
CTACTCCAAATGCAAAAGCCACCCGAAGGCTCCAGAGCCCCTGCCTGGGGAGCAGTTTTG 1920
TGGCAGCAGAGGTGGTACCTTGCCAAAACGGAATGCAAAGGGCACCGAACCGGGTCTTGC 1980
ACTGTCGGCCAGGGATGGAGGGATGTCCAGTGCAGCGGGGGGCCCCCAGCTTCCTGGGGA 2040
AGAAGGAGACCGGTCACAGGATGTCTGGCAGTGGATGTTGGAGAGTGAGCGGCAGAGCAA 2100
GTCCAAGCCCCATAGTGCCCAAAGCATAAGAAAGAGCTACCCATTGGAGTCTGCCCGTGC 2160
GGCCCCAGGAGAACGAGTCAGCCGGCACCATCTGTTGGGGGCCAGCGGACACTCCCGCTC 2220
AGTGGCCCGGGCTCACCCATTTACCCAGGACCCTGCAATGCCTCCCCTTACCCCACCCAA 2280
CACTTTGGCACAGCTAGAGGAAGCCTGCCGCAGGCTGGCAGAGGTGTCGAAGCCCCAGAA 2340
GCAGCGGTGCTGCGTGGCCAGTCAGCAGAGGGACAGGAACCACTCGGCTGCTGGTCAGGC 2400
AGGAGCCTCACCCTTCGCCAACCCAAGCCTGGCTCCAGAAGATCACAAAGAGCCAAAGAA 2460
ACTGGCAAGTGTCCACGCGCTCCAGGCCAGTGAGCTGGTTGTCACCTACTTTTTCTGTGG 2520
AGAAGAAATTCCATACAGGAGGATGCTGAAGGCTCAAAGCTTGACCCTGGGCCACTTCAA 2580
GGAGCAGCTCAGCAAAAAGGGAAATTACAGGTATTATTTCAAGAAGGCGAGTGACGAATT 2640
TGCCTGCGGAGCAGTTTTTGAGGAGATCTGGGACGACGAGACAGTGCTCCCCATGTACGA 2700
AGGCAGGATCCTGGGCAAAGTGGAGAGGATCGACTGAGCCTTGGCCTCCTCGGCGTGCAA 2760
CCTGGGCAAGCACCTCGGCGTGCACCATGGAGCCGAAGCCCAGAGACCCTGTCTCAGGCC 2820
TACGC 2825
```

FIG. 2

REPLACEMENT SHEET

```
215 ATG AGT AGC GCC GTG TTA GTG ACT
  1 M   S   S   A   V   L   V   T

CTC CTT CCA GAT CCC AGC AGC AGC TTC
L   L   P   D   P   S   S   S   F

CGC GAG GAT GCT CCG CGG CCC CCG GTT
R   E   D   A   P   R   P   P   V

CCG GGA GAA GAA GGG GAG ACC CCA CCG
P   G   E   E   G   E   T   P   P

TGT CAG CCT AGT GTG GGC AAG GTC CAG
C   Q   P   S   V   G   K   V   Q

TCC ACC AAA CCT ATG CCC GTT TCC TCT
S   T   K   P   M   P   V   S   S

AAT GCT AGG CGG AAT GAA GAT GGA CTG
N   A   R   R   N   E   D   G   L

GGG GAG CCC GAG GGG CGG GCC TCC CCC
G   E   P   E   G   R   A   S   P

GAT TCC CCT TTG ACC AGG TGG ACC AAG
D   S   P   L   T   R   W   T   K

TCT TTA CAC TCC TTG TTG GGT GAC CAG
S   L   H   S   L   L   G   D   Q

GAT GGT GCA TAC CTC TTC CGG ACT TTC
D   G   A   Y   L   F   R   T   F

CTG GAG AGG GAG AAA TGT GTG GAT ACG
L   E   R   E   K   C   V   D   T

CTG GAC TTC TGG TTT GCT TGT AAT GGG
L   D   F   W   F   A   C   N   G
```

FIG. 3A

REPLACEMENT SHEET

```
TTC AGG CAG ATG AAC CTG AAG GAT ACC
 F   R   Q   M   N   L   K   D   T

AAA ACT TTG CGA GTG GCC AAA GCA ATC
 K   T   L   R   V   A   K   A   I

TAT AAG AGG TAC ATT GAG AAC AAC AGC
 Y   K   R   Y   I   E   N   N   S

GTT GTC TCC AAG CAG CTG AAG CCC GCC
 V   V   S   K   Q   L   K   P   A

ACC AAG ACC TAC ATA CGA GAT GGC ATC
 T   K   T   Y   I   R   D   G   I

AAG AAG CAA CAG ATC GGC TCG GTC ATG
 K   K   Q   Q   I   G   S   V   M

TTT GAC CAG GCA CAG ACC GAG ATC CAG
 F   D   Q   A   Q   T   E   I   Q

GCA GTG ATG GAG GAA AAT GCC TAC CAG
 A   V   M   E   E   N   A   Y   Q

GTG TTC TTG ACT TCT GAC ATT TAC CTG
 V   F   L   T   S   D   I   Y   L

GAA TAT GTG AGG AGT GGG GGG GAA AAC
 E   Y   V   R   S   G   G   E   N

ACA GCT TAC ATG AGT AAC GGG GGA CTG
 T   A   Y   M   S   N   G   G   L

GGG AGC CTA AAG GTC TTA TGT GGC TAC
 G   S   L   K   V   L   C   G   Y

CTC CCC ACC TTG AAT GAA GAA GAG GAG
 L   P   T   L   N   E   E   E   E
```

FIG. 3B

REPLACEMENT SHEET

```
TGG ACG TGT GCC GAC CTC AAG TGC AAA
 W   T   C   A   D   L   K   C   K

CTC TCA CCC ACC GTG GTT GGC TTG TCC
 L   S   P   T   V   V   G   L   S

AGC AAA ACT CTT CGG GCC ACC GCG AGT
 S   K   T   L   R   A   T   A   S

GTG AGA TCC ACG GAA ACA GCT GAA AAC
 V   R   S   T   E   T   A   E   N

GGA TTC AGG TCC TTC AAG AGA AGC GAC
 G   F   R   S   F   K   R   S   D

CCA GTC AAT CCT TAT CAC GTA GGT TCC
 P   V   N   P   Y   H   V   G   S

GGC TAT GTC TTT GCA CCA GCC ACC AGC
 G   Y   V   F   A   P   A   T   S

GCC AAC GAC AGC GAG TTA TCC AGC GAC
 A   N   D   S   E   L   S   S   D

GCA CTG ACC GAC GAT TCC ATG TCC ATG
 A   L   T   D   D   S   M   S   M

ACG GAC AGT AGC GTA GAT GGA GTC CCT
 T   D   S   S   V   D   G   V   P

CCT TAC CGC ATG GGG AGT AAG AAA CAG
 P   Y   R   M   G   S   K   K   Q

CTC CAG AGA GAG ATG CAT CGC AGT GTG
 L   Q   R   E   M   H   R   S   V

AAG GCC AAT GGC CAA GTG TCT CTA CCT
 K   A   N   G   Q   V   S   L   P

CAT TTT CCG AGA ACC CAC CGC CTG CCC
 H   F   P   R   T   H   R   L   P
```

REPLACEMENT SHEET

FIG. 3C

```
AAG GAG ATG ACG CCT GTG GAA CCT GCT
 K   E   M   T   P   V   E   P   A

GCC TTC GCC GCC GAG CTC ATC TCC AGG
 A   F   A   A   E   L   I   S   R

CTG GAG AAA CTG AAA CTG GAG CTG GAA
 L   E   K   L   K   L   E   L   E

AGC CGC CAT AGT CTG GAG GAG CGG CTG
 S   R   H   S   L   E   E   R   L

CAG CAG ATC CGG GAG GAT GAA GAA AAG
 Q   Q   I   R   E   D   E   E   K

GAG GGG TCT GAG CAG GCC CTG AGC TCA
 E   G   S   E   Q   A   L   S   S

CGG GAT GGA GCA CCG GTC CAG CAC CCC
 R   D   G   A   P   V   Q   H   P

CTG GCC CTC CTA CCC TCC GGC AGC TAT
 L   A   L   L   P   S   G   S   Y

GAA GAG GAC CCA CAA ACC ATT TTG GAC
 E   E   D   P   Q   T   I   L   D

GAC CAC CTC TCC AGG GTC CTC AAG ACC
 D   H   L   S   R   V   L   K   T

CCC GGC TGT CAA TCC CCT GGT GTG GGT
 P   G   C   Q   S   P   G   V   G


CGC TAC AGC CCA CGG TCC CGC TCC CCC
 R   Y   S   P   R   S   R   S   P

GAC CAC CAC CAC CAG CAC CAC CAC CAT
 D   H   H   H   Q   H   H   H   H
```

REPLACEMENT SHEET

FIG. 3D

```
CAG CAG TGT CAT ACC CTT CTT TCG ACT
 Q   Q   C   H   T   L   L   S   T

GGG GGC AAG CTG CCC CCC GTG GCT GCT
 G   G   K   L   P   P   V   A   A

TGC CCC CTC CTT GGA GGC AAG AGC TTC
 C   P   L   L   G   G   K   S   F

CTG ACC AAA CAG ACG ACG AAG CAC GTT
 L   T   K   Q   T   T   K   H   V

CAC CAC CAC TAC ATC CAC CAC CAC GCC
 H   H   H   Y   I   H   H   H   A

GTC CCC AAG ACC AAG GAG GAG ATC GAG
 V   P   K   T   K   E   E   I   E

GCA GAA GCC ACA CAG AGA GTC CGC TGC
 A   E   A   T   Q   R   V   R   C

CTC TGT CCT GGG GGA ACA GAT TAT TAT
 L   C   P   G   G   T   D   Y   Y

TGC TAC TCC AAA TGC AAA AGC CAC CCG
 C   Y   S   K   C   K   S   H   P

AAG GCT CCA GAG CCC CTG CCT GGG GAG
 K   A   P   E   P   L   P   G   E

CAG TTT TGT GGC AGC AGA GGT GGT ACC
 Q   F   C   G   S   R   G   G   T

TTG CCA AAA CGG AAT GCA AAG GGC ACC
 L   P   K   R   N   A   K   G   T

GAA CCG GGT CTT GCA CTG TCG GCC AGG
 E   P   G   L   A   L   S   A   R

GAT GGA GGG ATG TCC AGT GCA GCG GGG
 D   G   G   M   S   S   A   A   G
```

REPLACEMENT SHEET

FIG. 3E

```
GGC CCC CAG CTT CCT GGG GAA GAA GGA
 G   P   Q   L   P   G   E   E   G

GAC CGG TCA CAG GAT GTC TGG CAG TGG
 D   R   S   Q   D   V   W   Q   W

ATG TTG GAG AGT GAG CGG CAG AGC AAG
 M   L   E   S   E   R   Q   S   K

TCC AAG CCC CAT AGT GCC CAA AGC ATA
 S   K   P   H   S   A   Q   S   I

AGA AAG AGC TAC CCA TTG GAG TCT GCC
 R   K   S   Y   P   L   E   S   A

CGT GCG GCC CCA GGA GAA CGA GTC AGC
 R   A   A   P   G   E   R   V   S

CGG CAC CAT CTG TTG GGG GCC AGC GGA
 R   H   H   L   L   G   A   S   G

CAC TCC CGC TCA GTG GCC CGG GCT CAC
 H   S   R   S   V   A   R   A   H

CCA TTT ACC CAG GAC CCT GCA ATG CCT
 P   F   T   Q   D   P   A   M   P

CCC CTT ACC CCA CCC AAC ACT TTG GCA
 P   L   T   P   P   N   T   L   A

CAG CTA GAG GAA GCC TGC CGC AGG CTG
 Q   L   E   E   A   C   R   R   L

GCA GAG GTG TCG AAG CCC CAG AAG CAG
 A   E   V   S   K   P   Q   K   Q

CGG TGC TGC GTG GCC AGT CAG CAG AGG
 R   C   C   V   A   S   Q   Q   R
```

FIG. 3F

REPLACEMENT SHEET

```
GAC AGG AAC CAC TCG GCT GCT GGT CAG
 D   R   N   H   S   A   A   G   Q

GCA GGA GCC TCA CCC TTC GCC AAC CCA
 A   G   A   S   P   F   A   N   P

AGC CTG GCT CCA GAA GAT CAC AAA GAG
 S   L   A   P   E   D   H   K   E

CCA AAG AAA CTG GCA AGT GTC CAC GCG
 P   K   K   L   A   S   V   H   A

CTC CAG GCC AGT GAG CTG GTT GTC ACC
 L   Q   A   S   E   L   V   V   T

TAC TTT TTC TGT GGA GAA GAA ATT CCA
 Y   F   F   C   G   E   E   I   P

TAC AGG AGG ATG CTG AAG GCT CAA AGC
 Y   R   R   M   L   K   A   Q   S

TTG ACC CTG GGC CAC TTC AAG GAG CAG
 L   T   L   G   H   F   K   E   Q

CTC AGC AAA AAG GGA AAT TAC AGG TAT
 L   S   K   K   G   N   Y   R   Y

TAT TTC AAG AAG GCG AGT GAC GAA TTT
 Y   F   K   K   A   S   D   E   F

GCC TGC GGA GCA GTT TTT GAG GAG ATC
 A   C   G   A   V   F   E   E   I

TGG GAC GAC GAG ACA GTG CTC CCC ATG
 W   D   D   E   T   V   L   P   M

TAC GAA GGC AGG ATC CTG GGC AAA GTG
 Y   E   G   R   I   L   G   K   V

GAG AGG ATC GAC TGA 2737
 E   R   I   D  Stop
```

REPLACEMENT SHEET

FIG. 3G

Conductin constructs	Interaction with β-Catenin	APC #1	APC #2	GSK3β	Degradation of β-catenin in SW480 cells
	220	6	9	18	yes
	490	0	0	n.d.	yes
	1060	0	0	670	no
	0	190	260	0	no
	0	110	250	84	no
	0	390	390	0	no

FIG. 4

REPLACEMENT SHEET